WHAT WE CLAIM IS:

1. Method for processing images acquired by a CAT scan technique, comprising a stage of homogeneity map generation (HOMO-GEN) which comprises the following steps:

1a) dividing the image into boxes of different size iteratively, firstly in four quadrants, then proceeding by linear or exponential steps till a predefined size;

2a) calculating for each quadrant at each division scale the relative dispersion (RD) obtained as the Standard Deviation divided by the mean value of the pixels, in order to associate to each quadrant a set of values of RD;

3a) generating a homogeneity map as a grey scale image, each point's brightness being given by the mean of the set of values of RD for each quadrant, and extending the mean values of RD in a range from 0 to 255, wherein the image's regions having higher brightness correspond to homogeneous regions.

2. Method according to claim 1, wherein the step of extending the mean values of RD in a range from 0 to 255 in step 3a) is performed by multiplying the RD mean value associated to each pixel for an integer N above 1 and up to 255 and setting to 255 all the extended RD values that after the multiplication result in a number

above 255.

3. Method according to claim 2, wherein N is 255.

4. Method according to claim 1, further comprising a step of:

4a) selecting the quadrants of the homogeneity map having a RD above a predefined threshold value, saving their position in the storing means of the processing system (7) and reconstructing an image made of the said selected quadrants.

5. Method according to claim 1, the method further comprising a step of generating a double image wherein the original CAT image and the corresponding homogeneity map are set side by side.

6. Method according to claim 1, further comprising a stage of homogeneity cleaning (HOMO-CLEAN) which comprises the following steps:

1b) quantizing to 1 bit the homogeneity map generated according to the step 3a) of the HOMO-GEN stage in order to create a black-and-white image;

2b) darkening, in the homogeneity map, the pixels homologues to the dark pixels in the said image quantized to 1 bit;

3b) generating an image resulting from the step 2b).

7. Method according to claim 1, further

comprising a stage of homogeneity identification (HOMO-ID) which comprises a step of quantizing to 1 bit the image generated according to step 3b) of the HOMO-CLEAN stage.

8. Method according to claim 6, wherein the said step of quantizing to 1 bit the homogeneity map or the image generated according to step 3b) of the HOMO-CLEAN stage, respectively, comprises the following steps:

1c) considering a parameter for each pixel;

2c) comparing said pixel's parameter with a preset threshold value or threshold range for said parameter;

3c) selecting a cluster of active pixels and a cluster of inactive pixels on the base of said comparison.

9. Method according to claim 8, wherein said pixel's parameter is brightness intensity.

10. Method according to claim 1, further comprising a stage of 3D-reconstruction (3D-R) which comprises overlapping the 2D-images collected for each section along the Z axis of the examined object.

11. Method according to claim 10, which comprises the following steps:

1d) overlapping each image with the subsequent image along the Z axis;

2d) minimizing the difference of brightness between

overlapping pixels by shifting along the x axis and/or the y axis an image with respect to each other;

3d) repeating steps 1g) and 2g) for each pair of adjacent images.

12. Method according to claim 1, further comprising a stage of volume calculation (V-CLC) which comprises the following steps:

1e) calculating the area of each object in a first 2D-image corresponding to a first object's section;

2e) multiplying the area calculated according to step 1e) for the distance between the said first section's image and the subsequent section's image, taken in the Z direction of scanning, wherein an image of the same object is contained;

3e) reiterating steps 1e) and 2e) for each section's image in the order.

13. Method according to claim 12, wherein the overall volume of the objects in the examined tissue is determined as the sum of the single volumes.

14. Method according to claim 12, wherein the area calculation according to step 1e) is made by counting the number of active pixels belonging to the same object and then multiplying for the area of the pixel.

15. Method according to claim 12, the volume being calculated as:

$$v = 1/3d(A + a + \sqrt{A.a})$$

wherein d is the known distance between the two sections, A is the area of the first object's section and a is the area of the second object's section.

16. A system (1) for acquiring and processing digital images, comprising a CAT scan (2) provided with a motorised bed (3) and an X-ray tube (4) and a detector bank (5) positioned diametrically opposite to the X-ray tube, the X-ray tube (4) and the detector bank (5) being able to rotate synchronously around the said bed (3), the system (1) further comprising electronic image acquisition means (6) operatively connected to said CAT scan (2), a processing system (7) operatively connected to said CAT scan (2) and said image acquisition means (6), said processing system (7) comprising a processing unit (CPU), storing means which include a RAM working memory and a hard disk, said processing system (7) running a program (PRG) to perform a method according to claim 1.

17. A software program (PRG) to perform the method according to claim 1.

18. A computer readable support comprising a program (PRG) to perform the method according to claim 1.

19. Use of a system (1) according to claim 16, for

performing a method as depicted in claim 1.